

NOTES ON BROMELIACEAE, XXXVI

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VRIESEA

SUPPLEMENT II

This supplement to my provisional key to Vriesea (Phytologia 13: 84. 1966) is organized on the same plan as the preceding one on Tillandsia. It is intended as final before the completion of the manuscript of the genus for my monograph. As before, species marked with asterisk are to be added or substituted in the key.

Subkey I

- 6(1). Floral bracts (25-) 35 mm long; (add:) 2-3 times as long as the internodes.
- 6a. Leaf-sheaths merging with blades, castaneous only near base; floral bracts glabrous except the pruinose margin; sepals 20-25 mm long; scape about equaling the leaves. Peru.  
V. cereicola
- 6a. Leaf-sheaths contracted at junction with blades, almost wholly castaneous; floral bracts evenly lepidote at first; sepals 15-20 mm long; scape usually much shorter than the leaves. Costa Rica to Venezuela and Bolivia, Greater Antilles.....\*V. incurva
- 6(2). Floral bracts 40 (-60) mm long, (add:) 3-5 times as long as the internodes, glabrous; scape stout.
- 6b. Scape mostly erect and exceeding the leaves; floral bracts 4-5 times as long as the internodes. Colombia, Venezuela.  
V. robusta
- 6b. Scape mostly decurved and shorter than the leaves; floral bracts 3-4 times as long as the internodes. Peru.  
\*V. patula
- 11(1). Floral bracts distinctly and densely lepidote; spikes oblong or linear; petals crenulate or lacerate.
- 11a. Spikes distinctly complanate; floral bracts nerved.  
Colombia to Venezuela and Bolivia.....V. heterandra
- 11a. Spikes subterete; floral bracts even except the keel. Peru  
\*V. appenii
- 12(2). Delete V. lacera, a synonym of V. heterandra.
- 16(1). Floral bracts nearly all convex and ecarinate, 24 (-25) mm long.
- 16a. Primary bracts obscurely lepidote, exposing much of the spikes. Colombia, Ecuador.....V. cylindrica
- 16a. Primary bracts densely and conspicuously lepidote, completely covering the lower spikes. Peru..\*V. sagasteguii

## Subkey II

- 4(1). Delete V. sulcata from this subkey. The leaf-blade is not triangular.
- 3(2). Leaf-blades cinereous from a complete covering of scales.
4. Sepals 10-12 mm long; floral bracts 16-25 mm long.
5. Floral bracts carinate; plant lacking stolons. Nicaragua to Peru.....V. chontalensis
5. Floral bracts convex, ecarinate; plant spreading by long, slender stolons. Ecuador, Peru.....\*V. espinosae
4. Sepals 15-30 mm long; floral bracts 18-60 mm long.
6. Floral bracts 45-60 mm long; sepals 24-30 mm long.
7. Rhachis soon exposed by the narrow floral bracts. Ecuador, Peru.....V. patula
7. Rhachis wholly covered by the broad, densely imbricate floral bracts. Ecuador.....\*V. petraea
6. Floral bracts 18-35 mm long; sepals 15-25 mm long.
8. Spike-rhachis densely lepidote, broadly winged and enfolding the bases of the flowers; scape erect, stout. Ecuador.....V. barclayana
8. Spike-rhachis nearly or quite glabrous, narrowly winged; scape decurved.
9. Leaf-sheaths merging with the blades, castaneous only near base; scape about equaling the leaves. Peru. V. cereicola
9. Leaf-sheaths contracted at junction with blades, almost wholly castaneous; scape usually much shorter than the leaves. Costa Rica to Venezuela and Bolivia, Greater Antilles.....\*V. incurva

## Subkey III

- 4(1). Lower spikes covered by the primary bracts; sepals 10-16 mm long.
- 4a. Lower primary bracts broadly rounded and apiculate. Lesser Antilles, Venezuela.....\*V. cowellii
- 4a. Lower primary bracts long-laminate. Peru, Bolivia. Tillandsia fusco-guttata
- 5(2). ....floral bracts ecarinate, 25 (-30) mm long.
- 5a. Sepals more than half exserted above the lax floral bracts. V. sincorana
- 5a. Sepals but slightly exserted above the floral bracts. \*V. vidalii
- 15(2). Floral bracts sharply carinate toward apex.
19. Primary bracts (add:) covering more than half of each lower spike.
- 19a. Lower spikes completely covered by the primary bracts. West Indies, Mexico, Central America and Andean South America.....Tillandsia spp.

- 19a. Lower spikes somewhat exerted; inflorescence densely cylindrical; spikes broadly ovate. Guayana Highland of Brazil.....\*V. maguirei
- 24(1). Change Tillandsia dubia to \*Vriesea dubia.
- 27(1). Change Tillandsia zamorensis to \*Vriesea zamorensis.
- 34(1). V. egregia is a synonym of \*V. cowellii.
- 41(1). Sepals 9-10 mm long.
- 41a. Floral bracts strongly nerved.....Tillandsia spp.
- 41a. Floral bracts even or nearly so. Costa Rica....\*V. umbrosa
- 43(2). Sepals not over 18 mm long, much exceeding the floral bracts; pedicels short.
- 43a. Upper scape-bracts densely imbricate; inflorescence slenderly cylindrical.....V. thyrsoidea
- 43a. Upper scape-bracts barely imbricate; inflorescence ellipsoid.....\*V. cacuminis

## Subkey IV

- 15(2). Vriesea minarum is a synonym of \*V. atro-purpurea.

## Subkey V

- 3(1). Inflorescence many-flowered (15-) 27 cm long, exceeding the leaves.
- 3a. Floral bracts sharply carinate toward apex. Brazil.  
\*V. rubryae
- 3a. Floral bracts scarcely or not at all carinate.
- 3b. Floral bracts rugose when dry, sparsely punctate-lepidote. Mexico.....\*V. malzinei
- 3b. Floral bracts coriaceous, smooth and glabrous when dry. Brazil.....V. gradata
- 11(2). Floral bracts with evenly curved margins, (30-) 50 mm long; inflorescence usually lanceolate or elliptic.
- 11a. Sepals acute; floral bracts 30 mm long, inflated.  
\*V. rubryae
- 11a. Sepals obtuse; floral bracts 40-50 mm long.
12. Inflorescence very dense; each floral bract more than half covered by the one below it, red with yellow or green margins, its keel slightly curved.....V. inflata
12. Inflorescence subdense; each floral bract less than half covered by the one below it, its keel strongly curved.
13. Sepals 38 mm long. (V. petropolitana)...\*V. heterostachys
13. Sepals 27 mm long.....V. pinottii
- 15(1). Change Tillandsia monstrum to \*Vriesea monstrum.
- .....

- 17(1). Change Tillandsia dubia to \*Vriesea dubia.
- 26(1). V. pachyspatha is a synonym of \*V. gladioliflora.
- 30(2). Scape-bracts bracteiform; none of the floral bracts acuminate.
- 30a. Posterior sepals carinate.....Tillandsia fendleri
- 30a. Posterior and anterior sepals all ecarinate and alike.
- 30b. Sepals lance-ovate, 15 mm long. Trinidad, Colombia, Peru.  
\*V. chrysostachys
- 30b. Sepals narrow, 27-40 mm long.....Tillandsia spp.

## Subkey VI

- 6(1). .....floral bracts ecarinate.
- 6a. Leaf-blades rounded and long-apiculate, 13 mm wide; floral bracts even. Costa Rica.....V. apiculata
- 6a. Leaf-blades acuminate, 30 mm wide; floral bracts sulcate. Venezuela.....\*V. sulcata
- 6(2). .....floral bracts carinate. Brazil.
- 6b. Leaf-blade acute; inflorescence acute.....V. biguassuensis
- 6b. Leaf-blade broadly rounded and apiculate; inflorescence rounded at apex.....\*V. pallidiflora
- 19(1). Leaf-blades concolorous.
- 19a. Floral bracts about equaling the sepals. Cuba, Puerto Rico, Venezuela.....V. macrostachya
- 19a. Floral bracts much exceeding the sepals. Brazil.  
\*V. tijucana
- 28(2). Vriesea minarum is a synonym of \*V. atro-purpurea.

## Subkey VII

- 6(1). Floral bracts laterally compressed, sharply carinate. Brazil.
- 6a. Sepals slightly exserted.....V. retroflexa
- 6a. Sepals much shorter than the floral bracts...\*V. agostiniana

## Subkey VIII

- 8(1). Delete V. tuerckheimii from this part of the key because its scape-bracts are all imbricate.
- 21(2). Primary bracts much shorter than the sterile bases of the branches.
- 21a. Sepals thin, strongly nerved, especially when dry.
- 22a. Sepals 24 mm long. Colombia, Ecuador.....Tillandsia mima
- 22a. Sepals 10-12 mm long. Ecuador.  
\*Tillandsia marnier-lapostollei
- 21a. Sepals coriaceous, even.

- 23a. Floral bracts to 25 mm long, even. Trinidad, Guiana, Amazonian Brazil.....\*V. amazonica
- 23a. Floral bracts 7-15 mm long, faintly nerved. Hispaniola.  
V. tuerckheimii
- 29(1). Sepals acute. Brazil.
- 29a. Leaf-blades broadly rounded and apiculate; floral bracts 30-80 mm long, pale and slightly rugulose near apex.  
V. longicaulis
- 29a. Leaf-blades attenuate; floral bracts to 23 mm long, concolorous.....\*V. pereirae
- 30(1). Floral bracts about equaling or exceeding the sepals of at least the lowest flowers.
31. Floral bracts sharply carinate toward apex.
32. Sepals attenuate, 25-35 mm long; rhachis verrucose below each node; floral bracts acuminate. Costa Rica to Colombia, West Indies.....\*V. ringens
32. Sepals obtuse or broadly rounded, 15-24 mm long.
33. Sepals nearly as broad as long; floral bracts 35-45 mm long. Salvador.....\*V. cornus-cervi
33. Sepals narrow, about twice as long as wide. Brazil.
34. Floral bracts bright purple; primary bracts shorter than the bracteate sterile bases of the branches.  
V. brusquensis
34. Floral bracts green; primary bracts exceeding the naked sterile bases of the branches.....\*V. pabstii
31. Floral bracts obscurely if at all carinate.
35. Sterile bases of the branches naked; floral bracts scarcely if at all secund.
36. Sepals obovate, 25 mm long. Ecuador..\*Tillandsia cucullata
36. Sepals elliptic, 17 mm long. Costa Rica....\*V. camptoclada
35. Sterile bases of the branches bracteate.
37. Floral bracts thin, nerved. Colombia, Ecuador.  
Tillandsia secunda
37. Floral bracts coriaceous or subcoriaceous, even.
38. Leaves subrounded and apiculate, finely purple-spotted toward base. Mexico.....\*V. breedloveana
38. Leaves attenuate at apex.
39. Floral bracts obscurely carinate, more or less secund with the flowers, mostly broadly ovate. Mexico to Costa Rica.....\*V. werckleana
39. Floral bracts broadly and evenly convex, ecarinate, not at all secund, suborbicular.
40. Primary bracts much larger than the floral bracts; inflorescence much branched. Costa Rica.  
V. kupperiana
40. Primary bracts scarcely larger than the floral bracts; inflorescence few-branched. Colombia.....\*V. confusa
- 40(1). Branches with naked sterile bases, 5-8-flowered. Brazil.
- 40a. Leaves broadly acute and apiculate; sepals little exceeding

- the floral bracts.....V. penduliflora  
 40a. Leaves attenuate at apex; sepals much exceeding the floral  
 bracts.....\*V. duarteana  
 42(1). contradicts 30(2). Therefore delete V. werckleana and V.  
kupperiana which are inserted above under 30(1).  
 47(2). Leaves covered on both sides with appressed brown-centered  
 scales.  
 47a. Sheaths green, concolorous with the blades.....V. cearensis  
 47a. Sheaths dark castaneous.....\*V. saxicola

## Subkey IX

- 4(1). Floral bracts acute.  
 4a. Leaf-blades ligulate, acuminate, over 30 mm wide. Guatemala  
V. pectinata  
 4a. Leaf-blades very narrowly triangular, 12 mm wide. Amazonian  
 Brazil.....\*V. mitoura  
 8(1). Floral bracts becoming secund with the flowers.  
 8a. Sepals 35 mm long, twice as long as wide. Guyana.  
V. pachychlams  
 8a. Sepals 22 mm long, broadly elliptic. Costa Rica.  
 \*V. burgeri  
 23(2). Sepals to 35 mm long.  
 23a. Leaf-blades ligulate, acuminate; sepals coriaceous. Cuba.  
V. haplostachya  
 23a. Leaf-blades very narrowly triangular; sepals chartaceous,  
 nerved. Venezuela.....\*V. wurdackii  
 28(1). Scape-bracts, or at least the upper ones, shorter than  
 the internodes; sepals much exceeding the floral bracts.  
 29. Leaf-blades narrowly triangular, attenuate; floral bracts  
 rounded, obtuse or apiculate.  
 30. Leaf-sheaths small, pale, scarcely distinct, strongly  
 nerved. Venezuela.....V. fibrosa  
 30. Leaf-sheaths large, castaneous, conspicuous, even. Brazil.  
 31. Rhachis flexuous, 2 mm thick; floral bracts much shorter  
 than the internodes.....\*V. lima  
 31. Rhachis geniculate, 3-4 mm thick; floral bracts equaling  
 or exceeding the internodes.  
 32. Upper scape-bracts much shorter than the internodes;  
 floral bracts 1-1.5 times as long as the internodes.  
V. brassicoides  
 32. Upper scape-bracts but slightly shorter than the inter-  
 nodes; floral bracts nearly 2 times the internodes.  
 \*V. goniorachis  
 29. Leaf-blades ligulate, acute or rounded and apiculate.  
 33. Sepals to 40 mm long, suboblong; leaf-blades 60-70 mm wide;  
 floral bracts ecarinate. Colombia.....V. socialis

33. Sepals 18-28 mm long, elliptic; leaf-blades 25-35 mm wide. Brazil.
34. Leaf-blades ligulate, 25 mm wide, broadly rounded and apiculate.....V. platzmannii
34. Leaf-blades narrowly lance-triangular, 35 mm wide, subacute and long-apiculate.....\*V. lancifolia
- 36(1). Floral bracts fleshy-coriaceous. Brazil.
- 36a. Rhachis flexuous, slender.....V. oligantha
- 36a. Rhachis geniculate, 3-4 mm thick.....\*V. goniorachis
- 39(1). Leaf-blades broadly rounded and apiculate.
- 39a. Floral bracts remaining erect or nearly so; leaf-blades obscurely punctulate-lepidote beneath. Brazil. V. unilateralis
- 39a. Floral bracts becoming secund with the flowers; leaf-blades strikingly white-lepidote beneath. Costa Rica. \*V. dodsonii

## Subkey X

- 7(2). Branches elongate, the lower ones 2-flowered. Costa Rica.
- 7a. Primary bracts very broadly ovate.....V. crassiflora
- 7a. Primary bracts long-attenuate from an ovate base. \*V. hainesiorum
- 28(1). Scape erect; sepals....., 12-20 mm long.
- 28a. Sepals narrow, fleshy, dark and finely rugose when dry. Costa Rica.....\*V. sarcolepis
- 28a. Sepals broadly elliptic. Guatemala, Honduras.....V. montana
- Costa Rica.....V. irazuensis
- 32(1). V. attenuata is a synonym of \*V. gladioliflora.
- 34(2). Sepals 17 mm long, suborbicular or elliptic.
- 34a. Leaf-sheaths pale; inflorescence dense; sepals suborbicular Costa Rica.....V. viridis
- 34a. Leaf-sheaths dark castaneous; inflorescence lax; sepals elliptic. Colombia.....\*V. orjuelae
- 35(2). Delete V. hainesiorum from this part of the key because its branches are elongate. Cf. above under 7(2).

AGOSTINIANA E. Pereira, Bradea 1: 33. 1971.

AMAZONICA (Baker) Mez. Floral bracts much shorter than the sepals.

APPENII Rauh, Bromel. Soc. Bull. 19: 111, fig. (p. 110). 1969.

ATRO-PURPUREA Alv. Silv. Fl. Montium 2, Add.: 3, pl. 131, fig. 1. 1931. Tillandsia citrina Baker, Handb. Bromel. 224.

1889, non Burchell ex Baker, 1879. Vriesea citrina E. Morr. ex

Baker, Handb. Bromel. 224. 1889, nomen in synon.; *ibid* (?), hortus, Rev. Hort. 77: 127. 1905, nomen. *V. minarum* L. B. Smith, Arq. Bot. S. Paulo II. 1: 118, pl. 126. 1943. *V. citrina* (Baker) L. B. Smith, Phytologia 21: 93. 1971.

BREEDLOVEANA L. B. Smith, sp. nov. A *V. werckleana* Mez, cui affinis, foliorum laminis subrotundatis apiculatisque base purpureo-maculatis differt.

PLANT known only from fragments but probably flowering nearly 2 m high. LEAVES to 38 cm long, laxly vestite with minute dark appressed scales throughout; sheaths ample, nearly concolorous with the blades; blades ligulate, subrounded and apiculate, 45 mm wide, green above, pale green beneath, finely purple-maculate toward base. SCAPE straight, 12 mm thick at apex, glabrous at least with age; scape-bracts (upper) erect, imbricate, broadly ovate. INFLORESCENCE laxly bipinnate, glabrous at least with age; primary bracts like the upper scape-bracts, cuspidate-acuminate, shorter than the bracteate sterile bases of the branches; branches curved-spreading, to 45 cm long, densely secund-flowered; rhachis flexuous, narrowly alate. FLORAL BRACTS secund with the flowers, broadly ovate-triangular, obtuse, obtusely carinate, 3 cm long, exceeding the sepals and more than twice as long as the internodes, coriaceous, even, pale brown; pedicels stout. SEPALS broadly elliptic, obtuse, 2 cm long, coriaceous, even, ecarinate. CAPSULE stout, acute, beaked, 25 mm long. Pl. I.

MEXICO: Chiapas: Mun. Zinacatan: Steep cliff along Mexican Highway 190 in the Zinacatan paraje of Navenchauk, alt. 2100 m, 29 August 1966, D. E. Breedlove 15438 (US, type).

BURGERI L. B. Smith, sp. nov. A *V. pachychlamyde* Mez, cui valde affinis, sepalis multo minoribus late ellipticis differt.

PLANT flowering 45 cm high. LEAVES 25 cm long, covered on both sides with bright white, dark-centered scales; sheaths broadly elliptic, ca. 9 cm long; blades ligulate, broadly rounded and apiculate, 3 cm wide, green above, more or less tinged with purple beneath. SCAPE erect, stout; scape-bracts tightly imbricate, elliptic, broadly acute and apiculate, coriaceous, rugulose when dry. INFLORESCENCE simple, dense, few-flowered, 10 cm long. FLORAL BRACTS distichous, becoming secund with the flowers, broadly ovate, subacute and cucullate, 35 mm long, exceeding the sepals and more than twice as long as the internodes, ecarinate, coriaceous, obscurely punctulate, rugulose when dry. SEPALS broadly elliptic, rounded at apex, 22 mm long, coriaceous; petals and stamens unknown. Pl. II.

COSTA RICA: Puntarenas: Epiphytic, forested land between Río Coton and Río Negro (about 15 km from Sabalito) near Las Alturas lumber camp, 8° 53' N, 82° 54' W, alt. 1200-1300 m, 17-18 January 1967, W. Burger & G. Matta U. 4583 (US, type; F, isotype).

CACUMINIS L. B. Smith, Phytologia 16: 79, pl. 1, fig. 25, 26. 1968.

CHRYSOSTACHYS E. Morr. Inflorescence simple or compound.

COWELLII (Mez & N. L. Britton) L. B. Smith, Phytologia 16: 80.



1968. Tillandsia cowellii Mez & N. L. Britton, Bull. Herb. Boiss. II. 3: 225. 1903. Vriesea egregia L. B. Smith, Phytologia 4: 355, pl. 1, fig. 4-6. 1953.
- DODSONII L. B. Smith, Phytologia 16: 80, pl. 2, fig. 1, 2. 1968.
- DUARTEANA L. B. Smith, Phytologia 16: 80, pl. 2, fig. 3-5. 1968.
- DUBIA (L. B. Smith) L. B. Smith, Phytologia 15: 197. 1967. Tillandsia dubia L. B. Smith, Phytologia 5: 284, pl. 2, fig. 4, 5. 1955.
- ESPINOSAE (L. B. Smith) Gilmartin, Phytologia 16: 163. 1968. Tillandsia espinosae L. B. Smith, Contr. U. S. Nat. Herb. 29: 498, fig. 65d, e. 1951.
- GLADIOLIFLORA (Wendland) Antoine, Wiener, Ill. Gart. 5: 98, pl. 1. 1880. Tillandsia gladioliflora Wendland, Hamb. Gartenzeit. 19: 31. 1863. Vriesea pachyspatha Mez & Wercklé, Bull. Herb. Boiss. II. 4: 867. 1904.
- GONIORACHIS (Baker) Mez. Flowers tardily secund.
- HAINESIORUM L. B. Smith. Branches with naked, slender, sterile base 8 mm long.
- HETERANDRA (André) L. B. Smith, Contr. U. S. Nat. Herb. 29: 443. 1951. Tillandsia heterandra André, Enum. Bromel. 7. 13 Dec 1888; Rev. Hort. 60: 567. 16 Dec 1888. T. lacera L. B. Smith, Fieldiana Bot. 28: 150, fig. 22 d-f. 1951. Vriesea lacera (L. B. Smith) L. B. Smith, Fieldiana Bot. 28: 831. 1957.
- HETEROSTACHYS (Baker) L. B. Smith, Phytologia 19: 289. 1970. Vriesea incurvata sensu E. Morr. Belg. Hortic. 32: 52, pl. 2. 1882, non Gaud. 1843, based on Binot s n. Tillandsia inflata Baker, Bot. Mag. 112: pl. 6882. 1886, as to Binot material but not as to basionym of Wawra. T. heterostachys Baker, Journ. Bot. 26: 106. Mar 1888. Vriesea petropolitana L. B. Smith, Arq. Bot. S. Paulo II. 1: 120, pl. 130. 1943.
- INCURVA (Grisebach) R. W. Read, Phytologia 16: 458. 1968. Tillandsia incurva Grisebach in Nachr. Ges. Wiss. Goett. "1864": 15. 1865.
- KUPPERIANA Suessenguth. Floral bracts about equaling the sepals.
- LANCIFOLIA (Baker) L. B. Smith. Flowers becoming secund.
- LIMAE L. B. Smith, Phytologia 20: 181, pl. 2, fig. 17, 18. 1970.
- MAGUIREI L. B. Smith, Mem. N. Y. Bot. Gard. 18, pt. 2: 32, fig. 5 f-h. 1969.
- MALZINEI E. Morr. var. DISTICHA L. B. Smith, Phytologia 22: 87, fig. 8. 1971. Flowers distichous.
- MITOURA L. B. Smith, Mem. N. Y. Bot. Gard. 18, pt. 2: 32, fig. 5 i-k. 1969.
- MONSTRUM (Mez) L. B. Smith, Phytologia 16: 81. 1968. Tillandsia monstrum Mez, Fedde Rep. Spec. Nov. 16: 78. 1919.
- ORJUELAE L. B. Smith, Phytologia 16: 81, pl. 2, fig. 6-8. 1968.
- PABSTII McWilliams & Smith, Bromel. Soc. Bull. 20: 54, fig. 1-5. 1970.

- PALLIDIFLORA E. Pereira, *Rodriguesia* 26, no. 38: 117, pl. 7, 8. 1971.
- PATULA (Mez) L. B. Smith. Inflorescence also digitate.
- PEREIRAE L. B. Smith, *Phytologia* 16: 82, pl. 2, fig. 9-11. 1968.
- PETRAEA (L. B. Smith) L. B. Smith, *Phytologia* 20: 168. 1970.
- Tillandsia petraea* L. B. Smith, *Contr. U. S. Nat. Herb.* 29: 497, fig. 65 a-c. 1951.
- RUBYAE E. Pereira, *Rodriguesia* 26, no. 38: 115, pl. 5. 1971.
- SAGASTEGUII L. B. Smith, *Phytologia* 16: 82, pl. 2, fig. 12, 13. 1968.
- SARCOLEPIS L. B. Smith, sp. nov. A *V. montana* (L. B. Smith) L. B. Smith & Pittendrigh et *V. irazuensis* (Mez & Wercklé) L. B. Smith & Pittendrigh, quibus affinis, sepalis angustis carnosis ex sicco atris et minute rugosis differt.
- PLANT flowering 7 dm high. LEAVES numerous, rosulate, suberect, over 25 cm long, obscurely lepidote; sheaths elliptic, ca. 10 cm long, dark castaneous toward base; blades subligulate, acute, ca. 25 mm wide, marked with fine wavy transverse lines. SCAPE erect, slender; scape-bracts erect, closely involute, exceeding the internodes, ovate, acute. INFLORESCENCE laxly bipinnate, 13 cm long; axis slender, nearly straight; primary bracts spreading, broadly ovate, acute and apiculate, to 5 cm long; branches aborted; flowers 2 at each node. FLORAL BRACTS elliptic, obtuse, ca. 1 cm long. SEPALS slightly asymmetric, elliptic, obtuse, 20 mm long, fleshy, dark and minutely rugulose when dry; petals elliptic, obtuse, 45 mm long; stamens included. Pl. III.
- COSTA RICA: Alajuela: Terrestrial, wet montane forest, Volcán Poas, alt. 2525 m, 13 Aug 1964, M. F. Tessene 1580 (WIS, type).
- SAXICOLA L. B. Smith, *Phytologia* 16: 83, pl. 2, fig. 14-15. 1968.
- STENOPHYLLA (Mez & Wercklé) L. B. Smith & Pittendrigh, *Journ. Wash. Acad. Sci.* 43: 403. 1953. *Thecophyllum stenophyllum* Mez & Wercklé, *Bull. Herb. Boiss.* II. 4: 875. 1904. *T. acuminatum* L. B. Smith, *Contr. Gray Herb.* 117: 30, pl. 2, fig. 28, 29. 1937, not *Vriesea acuminata* Mez & Wercklé, 1904. *V. attenuata* L. B. Smith & Pittendrigh, *Journ. Wash. Acad. Sci.* 43: 401. 1953, nom. nov.
- SULCATA L. B. Smith. Leaf-blade narrowly subtriangular, the sides slightly outcurved.
- TIJUCANA E. Pereira, *Rodriguesia* 26, no. 38: 116, pl. 6. 1971.
- TUERCKHEIMII (Mez) L. B. Smith. Scape-bracts all imbricate.
- UMBROSA L. B. Smith, sp. nov. A *V. ranifera* L. B. Smith, cui affinis, foliorum laminis angustioribus omnino viridibus, scapi bracteis attenuatis, bracteis florigeris sepalisque multo minoribus differt.
- PLANT flowering over 7 dm high. LEAVES over 7 dm long, dark green; sheaths elliptic, covered with white appressed dark-centered scales; blades ligulate, acute, cuspidate-thickened, 5 cm wide, soon glabrous. SCAPE erect, slender; scape-bracts

imbricate, the lower subfoliaceous, the upper ovate, attenuate. INFLORESCENCE narrowly cylindrical, 15 cm long, laxly bipinnate; axes slender, obscurely lepidote; primary bracts broadly ovate, acuminate with a thickened apex, about equaling or shorter than the axillary branches, obscurely lepidote; branches suberect, lax, to 5-flowered with the terminal one usually much reduced, slender, geniculate, the sterile base short, naked. FLORAL BRACTS suborbicular, 10 mm long, ecarinate, coriaceous, even, glabrous; pedicels obconical, 5 mm long. SEPALs suborbicular, 12 mm long, coriaceous, even, glabrous; petals 30 mm long, pale greenish white; stamens included. Plate IV.

COSTA RICA: San José: on Inga in deep shade, wooded area near the escarpment with frequent wind and rain from the Caribbean, La Palma area, northeast of San Jeronimo, above the La Hondura valley, 10° 2' N, 84° 0' W, alt. 1500 m, 27 May - 1 June 1968, W. C. Burger & R. G. Stolze 5333 (US, type; F, isotype).

VIDALII L. B. Smith & Handro, *Phytologia* 19: 289, pl. 1, fig. 22-24. 1970.

WERCKLEANA Mez. Floral bracts about equaling the sepals.

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United States National Museum, Washington, D. C., U. S. A.

Plate I



*Vriesea breedloveana* L. B. Smith

Plate II



4503 COSTA RICA  
 Vriesea burgeri L. B. Smith  
 Epiphyte on a fallen tree partially about 1 m  
 high at first, fruit becoming brown.

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NATIONAL HERBARIUM

Vriesea burgeri - B. Smith

Vriesea burgeri L. B. Smith

## Plate III



*Vriesea sarcolepis* L. B. Smith

Plate IV



Vriesea umbrosa L. B. Smith